

WHAT IS CLAIMED IS:

1. A liquid crystal display device comprising:
a first substrate having thereon a pixel
electrode and an active element;

a second substrate having thereon an opposed
electrode; and

a liquid crystal layer interposed between said
first and second substrates with said electrodes
facing each other,

wherein when a direction of an orientation
regulating force given to liquid crystal molecules of
said liquid crystal layer within a region of said
pixel electrode is taken as a first direction and a
direction of an orientation regulating force due to
an edge of said pixel electrode on said first
substrate given to said liquid crystal molecules near
said edge is taken as a second direction, an
orientation control element giving an orientation
regulating force in a third direction which
counteracts said orientation regulation force in said
second direction is locally provided in a part near
said edge.

2. The device according to claim 1, wherein said
orientation control element is constituted by a
plurality of fine slits formed in said pixel
electrode in an oblique direction relative to an
extending direction of said edge or a plurality of
fine protrusions formed on said pixel electrode in a

oblique direction relative to an extending direction of said edge.

3. The device according to claim 2, wherein at least a part of said fine slits or said fine protrusions are different in shape and/or spaced interval of arrangement from each other;

4. The device according to claim 1, wherein said orientation control element is a hollow formed in a part other than said pixel electrode.

5. The device according to claim 1, wherein said orientation control element is formed so that an angle ϕ_2 made by said second and third directions is bigger than an angle ϕ_1 made by said first and second directions when said angle ϕ_1 is obtuse.

6. The device according to claim 1, wherein a dielectric anisotropy of said liquid crystal molecules of said liquid crystal layer is negative.

7. The device according to claim 1, wherein another orientation control element regulating said liquid crystal molecules of said liquid crystal layer to be oriented in said first direction is provided on said second substrate.

8. A liquid crystal display device comprising:
a first substrate having thereon a pixel electrode and an active element;
a second substrate having thereon an opposed electrode; and

a liquid crystal layer interposed between said first and second substrates with said electrodes facing each other,

wherein an orientation control element giving an orientation regulating force to liquid crystal molecules near an edge of said pixel electrode on said first substrate is locally provided near said edge on said first substrate so that said liquid crystal molecules including those near said edge are oriented in substantially the same direction, when difference in orientation direction among said liquid crystal molecules adjacent to each other near said edge is caused by an orientation regulating force given by said edge of said pixel electrode to said liquid crystal molecules of said liquid crystal layer when voltage is being applied between said pixel and opposed electrodes.

9. The device according to claim 8, wherein said orientation control element is constituted by a plurality of fine slits formed in said pixel electrode in an oblique direction relative to an extending direction of said edge or a plurality of fine protrusions formed on said pixel electrode in an oblique direction relative to an extending direction of said edge.

10. The device according to claim 9, wherein at least a part of said fine slits or said fine

protrusions are different in shape and/or spaced interval of arrangement from each other;

11. The device according to claim 8, wherein said orientation control element is a hollow formed in a part other than said pixel electrode.

12. The device according to claim 8, wherein a dielectric anisotropy of said liquid crystal molecules of said liquid crystal layer is negative.

13. A liquid crystal display device comprising:
a first substrate having thereon a pixel electrode and an active element;

a second substrate having thereon an opposed electrode; and

a liquid crystal layer interposed between said first and second substrates with said electrodes facing each other,

wherein a first orientation control element extending in a nonparallel direction relative to an extending direction of an edge of said pixel electrode and a second orientation control element extending in a parallel direction relative to an extending direction of said edge are provided on at least one of said first and second substrates, and

said first orientation control element is larger in width than said second orientation control element.

14. The device according to claim 13, wherein at least one of said first and second orientation

control elements is a slit formed in said pixel electrode or said opposed electrode.

15. The device according to claim 13, wherein at least one of said first and second orientation control elements is a protrusion formed on said pixel electrode or said opposed electrode.

16. The device according to claim 13, wherein a dielectric anisotropy of said liquid crystal molecules of said liquid crystal layer is negative.

17. A liquid crystal display device comprising:
a first substrate having thereon a pixel electrode and an active element;

a second substrate having thereon an opposed electrode; and

a liquid crystal layer interposed between said first and second substrates with said electrodes facing each other,

wherein a first orientation control element extending in a nonparallel direction relative to an extending direction of an edge of said pixel electrode and a second orientation control element extending in a parallel direction relative to an extending direction of said edge are provided on at least one of said first and second substrates, and

liquid crystal molecules of said liquid crystal layer on said second orientation control element are non-vertically oriented relative to said substrate

when no voltage is being applied between said pixel and opposed electrodes.

18. The device according to claim 17, wherein said liquid crystal molecules of said liquid crystal layer on said second orientation control element are oriented in substantially the same direction as an extending direction of said second orientation control element.

19. The device according to claim 17, wherein at least one of said first and second orientation control elements is a slit formed in said pixel electrode or said opposed electrode.

20. The device according to claim 17, wherein at least one of said first and second orientation control elements is a protrusion formed on said pixel electrode or said opposed electrode.

21. The device according to claim 17, wherein a dielectric anisotropy of said liquid crystal molecules of said liquid crystal layer is negative.

22. A liquid crystal display device comprising:
a first substrate having thereon a pixel electrode and an active element;
a second substrate having thereon an opposed electrode; and
a liquid crystal layer interposed between said first and second substrates with said electrodes facing each other,

wherein a first orientation control element extending in a nonparallel direction relative to an extending direction of an edge of said pixel electrode and a second orientation control element extending in a parallel direction relative to an extending direction of said edge are provided on at least one of said first and second substrates, and

at least a part of liquid crystal molecules of said liquid crystal layer on said second orientation control element are oriented in a vertical direction relative to said substrate when voltage is being applied between said pixel and opposed electrodes.

23. The device according to claim 22, wherein said second orientation control element is provided on said second substrate, and said pixel electrode does not exist on at least a part of a place on said first substrate opposed to said second orientation control element.

24. The device according to claim 22, wherein at least one of said first and second orientation control elements is a slit formed in said pixel electrode in an oblique direction relative to an extending direction of said edge.

25. The device according to claim 22, wherein at least one of said first and second orientation control elements is a protrusion formed on said pixel electrode in an oblique direction relative to an extending direction of said edge.

26. The device according to claim 22, wherein a dielectric anisotropy of said liquid crystal molecules of said liquid crystal layer is negative.

27. A liquid crystal display device comprising: a first substrate having thereon a pixel electrode and an active element;

a second substrate having thereon an opposed electrode; and

a liquid crystal layer interposed between said first and second substrates with said electrodes facing each other,

wherein a first orientation control element extending in a nonparallel direction relative to an extending direction of an edge of said pixel electrode and a second orientation control element extending in a parallel direction relative to an extending direction of said edge are provided on at

least one of said first and second substrates, and
said second orientation control element is
constituted by an assembly of shapes having
directivity in a direction of the substrate's plane
surface.

28. The device according to claim 27, wherein
said second orientation control element is formed to
extend in an outer direction from said first
orientation control element which is adjacent to said
second orientation control element on the same
substrate.

29. The device according to claim 27, wherein at least one of said first and second orientation control elements is a slit formed in said pixel electrode or said opposed electrode.

30. The device according to claim 27, wherein at least one of said first and second orientation control elements is a protrusion formed on said pixel electrode or said opposed electrode.

31. The device according to claim 27, wherein a dielectric anisotropy of said liquid crystal molecules of said liquid crystal layer is negative.

32. A liquid crystal orientation method of liquid crystal molecules of a liquid crystal layer in a liquid crystal display device comprising a first substrate having thereon a pixel electrode and an active element, a second substrate having thereon an opposed electrode, and said liquid crystal layer interposed between said first and second substrates with said electrodes facing each other, said method comprising the step of:

giving an orientation regulating force to a part near an edge of said pixel electrode on said first substrate in a third direction which is different from a first direction of an orientation regulating force given to said liquid crystal molecules of said liquid crystal layer within a region of said pixel electrode and a second direction of an orientation regulating force given due to said edge of said pixel

electrode on said first substrate to said liquid crystal molecules near said edge.

33. A liquid crystal orientation method of liquid crystal molecules of a liquid crystal layer in a liquid crystal display device comprising a first substrate having thereon a pixel electrode and an active element, a second substrate having thereon an opposed electrode, and said liquid crystal layer interposed between said first and second substrates with said electrodes facing each other, said method comprising the step of:

giving an orientation regulating force to said liquid crystal molecules near an edge of said pixel electrode on said first substrate so that said liquid crystal molecules including those near said edge are oriented in substantially the same direction, when difference in orientation direction among said liquid crystal molecules adjacent to each other near said edge is caused by an orientation regulating force given to said liquid crystal molecules of said liquid crystal layer due to said edge of said pixel electrode when voltage is being applied between said pixel and opposed electrodes.